

Abstract

Apparatus and methods are disclosed for performing beating heart surgery. Apparatus is disclosed comprising a cannula having a proximal end and a distal end; an aortic filter in connection with the cannula, the aortic filter having a proximal side and a distal side; a check valve in connection with the cannula, the check valve disposed on the distal side of the aortic filter; and a coronary artery filter in connection with the cannula, the coronary artery filter having a proximal end and a distal end, and the distal end of the coronary artery filter extending distally away from the distal end of the cannula. A method is disclosed comprising providing apparatus for performing beating heart surgery; deploying the apparatus in an aorta; performing a procedure on the aortic valve; and removing the apparatus from the aorta.